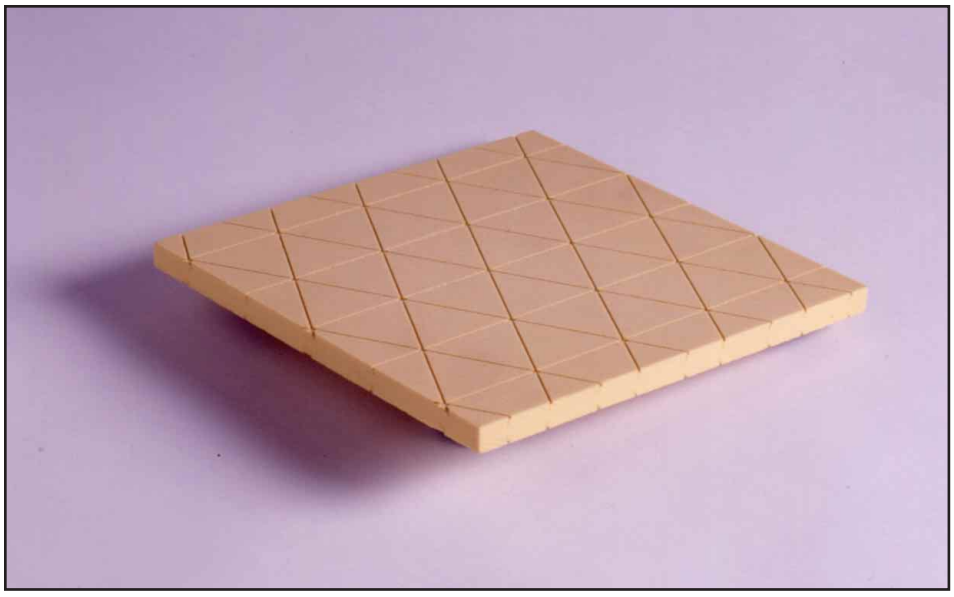
LAST-A-FOAM® FR-6700

GENERAL PLASTICS MANUFACTURING COMPANY



Product Description:

LAST-A-FOAM® FR-6700 is a CFC-free, rigid, closed-cell, flame-retardant polyurethane foam available in densities ranging from 3 to 40 pounds per cubic foot. It exhibits a high strength-to-weight ratio due to its cellular structure and cross-linked resin. Also, because of its closed-cell structure, LAST-A-FOAM® FR-6700 has great resistance to water absorption, and will not swell, crack, or split on exposure to water. LAST-A-FOAM® is stable, inert, and is resistant to most chemicals and solvents. It is easily worked with common tools, and performs well as a primary or replacement for many materials in a variety of applications.

The last two digits of product numbers describe foam density in pounds per cubic foot.

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TYPICAL USES

- **Honeycomb edge close-out for aircraft interior sandwich panels used in: Overhead storage bins, passenger cabin class dividers, and galleys and lavatories.**
- **Models and design prototypes**
- **Vacuum form dies, mold patterns**
- **Hazardous materials transport packages**
- **Insulated structural panels**

LAST-A-FOAM® FR-6700 also meets the requrements of several **military specifications**, and **materials specifications** of many aircraft and aerospace manufacturers. If your project or application requires certification, we can supply specification conformance information on request.

AVAILABLE FORMS

LAST-A-FOAM® FR-6700 series foams are available in densities of 3 to 20 pounds per cubic foot in 48" x 96" sheets, and in densities from 10 to 40 pounds per cubic foot in 18" x 100" sheets.

Many **LAST-A-FOAM® FR-6700** densities are available in large block sizes for special tooling and machining needs. Please feel free to inquire about large block size availablilities and costs.

Special sheet and block sizes gladly quoted on request.

FR-6700 SHEET SIZES AND WORKMANSHIP STANDARDS

Commercial cutting tolerance	**48" x 96" Sheets**	**18" x 100" Sheets**
0" to 2.00" thick	± .030"	same
over 2.00" thick	± .060"	same
-0", + 0.50" on length, -0", + 0.25" on width dimensions		
Aircraft cutting tolerance		
0" to 1.00" thick	± .015"	
over 1.00" thick	± .030"	
0" to 1.1" thick		± .005"
1.1" to 2.0" thick		± .010"
over 2.0" thick		± .020"
-0", + 0.25" on length, -0", + 0.25" on width dimensions		

PRODUCT PROPERTIES

Product Temperature Use Range:	-320˚F to +275˚F (-195˚C to +135˚C)
Coefficient of Linear Thermal Expansion: *(over -320˚F to +200˚F range, all densities)*	≈3.5 x 10-5 in/in/˚F
Closed Cell Content: (per ASTM D-2856, Procedure B)	95% @ 4 lbs/ft^3 98% @ 25 lbs/ft^3
Thermal Conductivity (initial): (ASTM C-518 at 75˚F mean temperature)	**k-factor** (BTU/Hr-ft^2-˚F/inch)
LAST-A-FOAM® FR-6703	0.155
LAST-A-FOAM® FR-6704	0.170
LAST-A-FOAM® FR-6706	0.199
LAST-A-FOAM® FR-6710	0.258
LAST-A-FOAM® FR-6718	0.376
LAST-A-FOAM® FR-6720	0.405
LAST-A-FOAM® FR-6725	0.479
Poisson's Ratio:	≈ 0.3 for all densities
Hardness, Shore-D (cut foam surface)	5.4 @ 4 lbs/ft^3 73 @ 40 lbs/ft^3
Tumbling Friability - weight loss per ASTM C-421 (tested 20 minutes @ 60 rpm)	22% @ 4 lbs/ft^3 0.16% @ 40 lbs/ft^3
Water Absorption: (per ASTM D-2842)	0.064 lbs/ft^^{2} @ 4 lbs/ft^3 0.028 lbs/ft^^{2} @ 18 lbs/ft^3
Dielectric constant (1.0 MHz):	1.05 @ 3 lbs/ft^3 to 1.40 @ 20 lbs/ft^3

(published, only; variation is linear between extremes, with little change between -50˚F- +300˚F)

CHEMICAL RESISTANCE

LAST-A-FOAM® products exhibit very-good-to-excellent resistance to a wide range of chemicals and solvents. Common petroleum liquid products such as oil or gasoline have no effect on **LAST-A-FOAM®** . Exposure to liquid acids and bases, either in dilute or highly-concentrated forms, does not significantly deteriorate foam properties at normal room temperatures. Some chlorinated solvents will cause **LAST-A-FOAM®** to temporarily swell or soften on exposure, which can be useful in some production situations. If you need specific advice regarding chemical resistance, please call General Plastics Manufacturing Company.

PHYSICAL PROPERTY DATA

— See attached graphs —

Note: Strength values derived from this data are **nominal ultimate values at which the foam fails to support a higher load.** Appropriate safety factors should be applied when incorporating foam materials into designs for structural applications.

FIRE SAFETY

Although **LAST-A-FOAM®** rigid polyurethane foam is flame retardant, it is an organic material which will burn in the presence of enough heat and oxygen. The Federal Aviation Regulation (FAR) 25.853 flame test is commonly used to assess the relative burning characteristics of foam plastic materials under controlled laboratory conditions. The results of these tests performed on **LAST-A-FOAM®** are listed below.

The results of these tests are not to be considered or used as fire hazard classifications, and are not intended or implied to reflect hazards presented by this or any other material in actual fire conditions.

Federal Aviation Regulation (FAR) 25.853 Flame Resistance Test

In this test, a 0.5" x 3.0" x 12" long foam sample is mounted in a vertical position. The lower (.5" x 3.0") end is exposed to a 1.5" long Bunsen burner flame for either 12 or 60 seconds. The time to flame extinguishment after removal of the Bunsen burner flame, and the burned length of the sample are recorded. Average test values for **LAST-A-FOAM® FR-6700** are given below:

	FAR 25.853 (b) 12-second ignition		**FAR 25.853 (a) 60-second ignition**	
LAST-A-FOAM® Grade	**Extinguish Time, seconds**	**Burn Distance, inches**	**Extinguish Time, seconds**	**Burn Distance, inches**
FR-6704				
FR-6706	2.6	1.7	0.3	4.0
FR-6710	9.6	2.7	2.3	4.5
FR-6718	7.6	1.9	-0-	4.5
FR-6725	6.3	1.8	1	3.7
FR-6740	1.6	.31	1	2.6

IMPORTANT NOTE: Exposed surfaces in building construction or other applications may present an unreasonable fire risk if not protected with adequate approved flame and thermal barrier materials such as one-half inch gypsum wallboard, cement asbestos board, metal sheeting, or similar materials. Check with appropriate local building code officials and insurance company representatives before proceeding with an application.

LAMINATED PANEL PERFORMANCE

Heat Distortion Test:

Measurement of change in **LAST-A-FOAM**® thickness before and after heating 0.500" specimen to 250˚F under 20 inches of mercury minimum vacuum for two (2) hours. Samples are allowed to cool under vacuum before measurement. This test demonstrates **LAST-A-FOAM**® product performance in laminated panels.

Heat Distortion Test Results:

	Thickness Change
LAST-A-FOAM® FR-6704	- 21.0%
LAST-A-FOAM® FR-6706	- 13.0%
LAST-A-FOAM® FR-6710	- 1.12%
LAST-A-FOAM® FR-6718	- 0.45%
LAST-A-FOAM® FR-6725	- 0.40%
LAST-A-FOAM® FR-6740	- 0.16%

BONDING, FILLING, AND SEALING LAST-A-FOAM PRODUCTS

LAST-A-FOAM® can be bonded, filled, sealed and painted with a wide variety of commercially available finishing products. Our customers report greatest success with automotive and wood finishing materials, but the range of usable products is not limited to those types.

General Plastics Manufacturing Company has prepared a **"Guide to Bonding, Filling, and Sealing Last-A-Foam® Products"**, available on request, to help with making appropriate finishing material selections. You should also follow manufacturer's safety instructions when using any bonding, filling or finishing product with **LAST-A-FOAM**®, and observe their recommended precautions.

MATERIAL HANDLING AND STORAGE SAFETY CONSIDERATIONS

When storing and handling rigid **LAST-A-FOAM**®, it should be treated as you would any possibly combustible organic solid. Storage precautions for wood are fully adequate when used with **LAST-A-FOAM**®. Scrap and waste **LAST-A-FOAM**® materials are inert and can be disposed of as you would ordinary solid waste.

Rigid **LAST-A-FOAM**® is essentially chemically inert, as the ingredients used to make it react completely during the manufacturing process. However, cutting, planing, shaping, routing and sanding Last-A-Foam produces dust. The inhaling of foam dust, as with any dust, should be avoided. Safety equipment appropriate for use in avoiding dust inhalation should be used when working with **LAST-A-FOAM**®.

IMPORTANT NOTICE TO PURCHASER: Test values shown in this document are not to be used for setting specifications. All statements, technical information, and data are based on testing we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. Users should perform their own tests on their own designs incorporating these materials to determine suitability for use in their application.

MANUFACTURERS AND MOLDERS OF
LAST-A-FOAM® HIGH DENSITY RIGID
AND FLEXIBLE POLYURETHANE FOAMS

AND

FABRICATORS OF PLASTIC SHEETS
FOR AIRCRAFT, INDUSTRIAL, CONSTRUCTION, MARINE,
NUCLEAR, SHIPPING AND MODELING INDUSTRIES

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